

WHAT IS CLAIMED IS

1. An exhaust gas purification apparatus for purifying exhaust gas exhausted from a diesel internal combustion engine and containing therein
5 harmful substances including particulates, NO_x, HC and CO, at least, said exhaust gas purification apparatus comprising:

a removal part for trapping and removing particulates in the exhaust gas;

a purification part for purifying NO_x, HC and CO through contact; and

10 a heat transfer part for transferring heat generated in said removal part to said purification part.

2. An exhaust gas purification apparatus according to claim 1, wherein said heat transfer part for transferring heat generated in said removal part is
15 based on conduction, retention or radiation of the heat.

3. An exhaust gas purification apparatus according to claim 1, wherein said removal part for trapping and removing particulates in the exhaust gas employs a filter composed of porous material or metal material.
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4. An exhaust gas purification apparatus according to claim 1, wherein said purification part for purifying NO_x, HC, CO through contact is a three -way catalyst, firing combustion catalyst, lean NO_x catalyst purifying NO_x in lean exhaust gas, HC adsorption catalyst, or electric catalyst.
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5. An exhaust gas purification apparatus according to claim 1, wherein said heat transfer part for transferring heat generated in said removal part

conducts (heat transfer) through a good heat conductor.

6. An exhaust gas purification apparatus according to claim 1, wherein said removal part for trapping and removing particulates in the exhaust gas and said purification part for purifying NO_x, HC and CO through contact are provided in a container made of material including good heat conductor, without intervening any heat insulator between an inner wall surface of said container and an outer wall surface of said container, and the heat generated in said removal part is transferred to said purification part.

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7. An exhaust gas purification apparatus according to claim 1, wherein said heat transfer part for transferring heat generated in said removal part uses heat accumulating material.

8. An exhaust gas purification apparatus according to claim 1, wherein said removal part for trapping and removing particulates in the exhaust gas and said purification part for purifying NO_x, HC and CO through contact are constructed as an integrated structure in which metal material is used as a substrate.

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9. An exhaust gas purification apparatus according to claim 1, wherein said exhaust gas purification apparatus is arranged so that said purification part is arranged at an upstream side of said exhaust gas purification apparatus and said removal part is arranged at a downstream side thereof.

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10. An exhaust gas purification apparatus according to claims 1 and 9, wherein in order to transfer the heat generated in said removal part for

removing particulates to said purification part at the upstream side, exhaust gas including combustion heat of particulates is transferred to said purification part at the upstream side.

- 5 11. An exhaust gas purification apparatus for purifying exhaust gas exhausted from a diesel internal combustion engine and containing therein harmful substances including particulates, NO_x, HC and CO, at least, said exhaust gas purification apparatus comprising:

10 a diesel particulate filter for trapping and removing particulates in the exhaust gas;
a catalyst for purifying the NO_x, HC and CO through contact; and
a heat conductive member for transferring heat generated in said diesel particulate filter to said catalyst.

- 15 12. An exhaust gas purification system comprising:

an exhaust gas passage for flowing out exhaust gas exhausted from a diesel internal combustion engine;

a removal part for trapping and removing particulates in the exhaust gas;

- 20 a purification part for purifying NO_x, HC and CO, included in the exhaust gas; and

a heat transfer part for transferring heat generated in said removal part to said purification part,

- 25 wherein exhaust gas containing therein harmful substances including the NO_x, HC and CO at least is purified.

13. An exhaust gas purification system according to claim 12, wherein said exhaust gas purification system has a temperature raising part for heating exhaust gas from said diesel internal combustion engine and raising the temperature of the exhaust gas.